

EXHIBIT

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1 UNITED STATES DISTRICT COURT
2 FOR THE EASTERN DISTRICT OF TENNESSEE
3 GREENEVILLE DIVISION
4 - - - - - :
5 ULTIMA SERVICES CORPORATION, :
6 Plaintiff, : CASE NO.
7 vs. :
8 U.S. DEPARTMENT OF :
9 AGRICULTURE, et al., :
10 Defendants. :
11 - - - - - :
12 DEPOSITION OF JONATHAN GURYAN
13 DATE: April 27, 2022
14 TIME: 9:30 a.m.
15 LOCATION: Via Zoom Videoconference
16
17 REPORTED BY: Constance H. Rhodes
18 Reporter, Notary
19
20
21
22 Job No. CS5185100

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<p>1 estimate of the relationship between the dependent 2 variable and the variable of interest.</p> <p>3 Q Okay. As you just said, in order for an 4 omitted variable to bias the results, there would 5 have to be a measurable difference in that 6 variable and the future measurement, correct?</p> <p>7 A Sorry. It was hard to hear the end of 8 the question.</p> <p>9 Q In order for an omitted variable to bias 10 the results, there would have to be a measurable 11 difference between that variable and the two 12 groups you are measuring or you are studying, 13 correct?</p> <p>14 A So in the context of running a 15 regression, measuring disparities and trying to 16 test for discrimination, the variable of interest 17 would be a variable that indicated membership in 18 the group that you are trying to measure the 19 disparity for or the discrimination against. So 20 that could be African Americans, it could be 21 women. There will be omitted variable bias if 22 there is a variable that is not included in the</p>	<p>1 inappropriate to draw a conclusion that the 2 difference in outcomes that you measure is the 3 result of discrimination because you've assumed that 4 this other factor was not a contributor. You 5 essentially assumed the answer to the question 6 before you started.</p> <p>7 BY MS. DINAN:</p> <p>8 Q In your report you explain -- this is on 9 page 12 -- that when performing your regression 10 analysis, in order to attribute a measured 11 difference to discrimination, it is necessary to 12 control for everything besides discrimination that 13 might cause the average outcomes of the two groups 14 to be different.</p> <p>15 Do you believe that it's possible to 16 control for every possible variable that might cause 17 the average outcomes of two groups to be different?</p> <p>18 A Using standard datasets like the current 19 population survey or the American community 20 survey, it is often impossible to do that. That 21 is the source of the criticism that I described 22 earlier.</p>
<p>1 regression as a control that meets two conditions. 2 One is that that variable contributes to the 3 outcome; and the other, which is I think what you 4 were getting at, is that the variable is 5 correlated with the variable of interest which in 6 this case would be an indicator variable for being 7 a member of the group that you are trying to test 8 discrimination in.</p> <p>9 Q Right. So in other words, you think 10 there are no differences between the two groups 11 you are studying on a particular variable, you 12 don't agree it wouldn't be a problem to fail to 13 control for it, right?</p> <p>14 MR. ROSMAN: Objection to the form of the 15 question. You may answer.</p> <p>16 THE WITNESS: So if we are referring to 17 some factor other than discrimination, if you assume 18 that that factor is not different between, say, 19 African Americans and whites, then -- and if that 20 assumption is correct, then failing to control for 21 it wouldn't lead to bias. But without testing 22 whether that assumption is correct, it would be</p>	<p>1 Q I'm asking a different question. I'm 2 asking is it ever possible to control for every 3 possible variable that might cause the average 4 outcomes of two groups to be different?</p> <p>5 MR. ROSMAN: Objection to the form of the 6 question.</p> <p>7 THE WITNESS: I think that's the same 8 question. What I'm saying is, because it is often 9 impossible using the datasets that people actually 10 have access to to control for every factor other 11 than discrimination that could cause differences in 12 outcomes, it is inappropriate to use that method, 13 given that limitation in the data, to draw a 14 conclusion that the difference in outcomes that you 15 observe must be the result of discrimination as 16 opposed to some other thing that it was not possible 17 to control for.</p> <p>18 BY MS. DINAN:</p> <p>19 Q But I'm talking about regardless of the 20 dataset. You are not using the CPS or the ACS or 21 datasets that I understand you have criticisms of, 22 is it ever possible to control for every possible</p>

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<p>1 you do often analyze large datasets using 2 regression analysis. In general, when you perform 3 a regression analysis, how do you determine which 4 variables to include? What types of information 5 would you consider?</p> <p>6 A It would depend on what question I was 7 trying to answer with that regression analysis. 8 Regressions measure average differences holding 9 things constant. They estimate -- calculate 10 conditional means, conditional averages. Whether 11 those conditional averages answer a particular 12 question depends on what question you are trying 13 to answer. So if I was trying to answer one 14 question I might try to set up the regression one 15 way. And if I was trying to answer another 16 question, I would set up the regression in a 17 different way.</p> <p>18 Q And you don't have any opinion as to how 19 you might consider which variables to include in a 20 regression to measure discrimination because you 21 don't think that's an appropriate method; is that 22 correct?</p>	<p>1 assigned the offer of participating in the program. 2 And I will sometimes control for other variables 3 that, you know, vary across different students in 4 the dataset to hold some of those things constant. 5 That's one type of situation where I regularly run 6 regressions.</p> <p>7 Q Why do you -- you've criticized 8 regression analyses quite a bit. Given the flaws 9 you've identified, why do you think it's 10 appropriate to use it in that context?</p> <p>11 A Just to -- every time you suggest this, 12 I'll correct you. I have criticized the use of 13 regression to try to test for discrimination. I 14 have not criticized the use of regression in 15 general. As I've said multiple times, regression 16 analysis is a valuable and powerful tool when it 17 is used to answer questions that it is appropriate 18 to answer.</p> <p>19 So I run regressions all the time. I 20 teach a class on the use of regressions and talk 21 about all the ways that it can be useful in trying 22 to answer questions in social science. And in the</p>
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<p>1 A I agree with the assessment of the 2 National Academy of Sciences that it is unlikely 3 that running a regression and trying to hold 4 things constant is likely to be able to rule out 5 other nondiscriminatory factors as potential 6 explanations, because most datasets that one would 7 have access to are unlikely to have all the 8 variables you would need to hold all those other 9 things constant. And so I would be unlikely to 10 use that method to try to test for discrimination 11 if testing for discrimination was the thing that I 12 was trying to do.</p> <p>13 Q Under what circumstances do you use 14 regression analysis?</p> <p>15 A So, for instance, when I'm evaluating 16 the effect of a program in schools where we've 17 randomly assigned the offer of participation to 18 some students and not to others, I will run a 19 regression of the outcome that I've specified as 20 key outcome we're trying to measure the effect on.</p> <p>21 Let's say it's, for instance, test scores 22 or grades on an indicator for having been randomly</p>	<p>1 method that I've just described, because we've 2 randomly assigned the offer of participation. I 3 don't actually need to control for variables because 4 the random assignment makes it so those variables 5 are going to be uncorrelated with the key variable 6 of interest.</p> <p>7 It can be useful to control for variables 8 because it helps improve the precision of the 9 estimates. It reduces the confidence intervals 10 essentially or the margin of error in the estimates.</p> <p>11 There are other situations where when we 12 randomly assign the offer of participation in a 13 program, the probability of being assigned to the 14 treatment group varies across, say, schools or 15 grades; and in that situation you have to control 16 for school or grade effects to make it so that the 17 random assignment is comparing people who had equal 18 chances of being offered participation in the 19 program.</p> <p>20 Q Is it fair to say that regression 21 analysis is commonly used by economists studying 22 or testing for discrimination?</p>

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<p>1 A I would not say it is commonly -- it is 2 commonly used -- I would not say that regression 3 is commonly used as a method to test for 4 discrimination in peer-reviewed studies that are 5 published in the last decade or so. I would say 6 that regression is a method that is commonly used 7 by economists to study other things. And I would 8 also say that regression is a method that is 9 commonly used by economists who are documenting 10 disparities.</p> <p>11 Q It's commonly used by economists for 12 documenting disparities but not necessarily 13 testing for the presence of discrimination?</p> <p>14 A That's -- I would -- that would be my 15 assessment, yes.</p> <p>16 Can I just clarify the question? I assume 17 when you say -- when you are asking what economists 18 are doing, I assume you are talking about in 19 peer-reviewed academic journals. I couldn't tell 20 you what economists are doing on their own time or 21 in other settings that are not peer-reviewed 22 settings.</p>	<p>1 that are themselves tainted by discrimination if 2 you're measuring for discrimination?</p> <p>3 MR. ROSMAN: Well, I'll object because I 4 think it has been answered in prior testimony. But 5 please answer.</p> <p>6 THE WITNESS: So I will -- I agree that if 7 one controls for a variable that is affected by 8 discrimination in the market that you are trying to 9 test for that can cause you to underestimate the 10 effects of discrimination. But it is also the case 11 that if there are differences in some factor of that 12 type as affected by discrimination that happened 13 elsewhere, whether it was in some other market or 14 long ago, that failing to control for those 15 differences also causes you to mismeasure 16 discrimination.</p> <p>17 BY MS. DINAN:</p> <p>18 Q Moving on to the next section of your 19 report on external validity. That's 6.1.2 on page 20 12. You say that finding on disparity in one 21 market does not imply there is necessarily a 22 similar disparity in another market.</p>
<p>1 Q Fair enough. I take it that's what 2 you're most familiar with -- the context in which 3 you're most familiar with how other economists 4 work; is that right?</p> <p>5 A Or presenting their work. But, you 6 know, I'm -- if there are the other settings that 7 economists are running regressions to test for 8 discrimination, they are not using methods that 9 could get published in peer-reviewed studies.</p> <p>10 I recognize that, you know, Dr. Wainwright 11 included hundreds of studies where there were 12 regressions run in these disparity studies, which I 13 had criticized. So I recognize that there are 14 economists who are using those methods. They just 15 are methods that are not appropriate for testing for 16 discrimination, and they are not methods that could 17 be used in studies that could get published in 18 peer-reviewed studies.</p> <p>19 Q We touched on this briefly earlier, but 20 just to confirm, would you agree that it's not 21 appropriate to rely on measures of qualifications, 22 abilities, or capacities in regression analysis</p>	<p>1 Do you believe that if you analyze a 2 number of different markets or industries and the 3 results consistently show the same disparities, that 4 would give you greater confidence on the external 5 validity of your results?</p> <p>6 A I believe that there could be 7 discrimination in some markets and not 8 discrimination in others. I believe that if you 9 find discrimination in some markets, it does not 10 necessarily mean that there's discrimination in 11 others.</p> <p>12 I also believe that if you analyze 13 discrimination in a market that is broader than the 14 market that you're trying to measure discrimination 15 in and you find a disparity or even 16 discrimination -- evidence of discrimination, that 17 that may mean that there's discrimination in one 18 part of the market but not the other.</p> <p>19 Q Okay. Would your answer be different if 20 what you're testing for is the presence of 21 discrimination in the economy as a whole?</p> <p>22 A What do you mean by "discrimination in</p>

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<p>1 controlling for in his report. Yes.</p> <p>2 Q Do you recall what those variables were?</p> <p>3 A They are variables like the corporate</p> <p>4 structure of the business and the level of</p> <p>5 confidential or top secret clearance of the</p> <p>6 business; the size of the business measured by</p> <p>7 employment or revenues; how old the business is;</p> <p>8 whether the business owner is a veteran, disabled</p> <p>9 veteran; and then whether the business is in the</p> <p>10 8(a) program or not; whether the business is woman</p> <p>11 owned or minority owned. I believe there might be</p> <p>12 some others.</p> <p>13 Q Were you able to identify any variable</p> <p>14 that you believe should have been controlled for</p> <p>15 by Mr. Chow that might have affected the average</p> <p>16 outcomes of the group he was measuring that he did</p> <p>17 not control for?</p> <p>18 A Again, I'll just have to correct that.</p> <p>19 I'm not offering an opinion about what someone</p> <p>20 should or should not have controlled for. I'm</p> <p>21 offering an opinion about whether the conclusion</p> <p>22 based on the analysis that was run, that the</p>	<p>1 result of discrimination as opposed to something</p> <p>2 else like potential differences in the bids that</p> <p>3 are submitted and the frequency with which</p> <p>4 businesses submit bids.</p> <p>5 Q And if you were to, how would you</p> <p>6 measure bidding behavior of businesses?</p> <p>7 A You would need data on the frequency</p> <p>8 with which businesses in the sample submitted</p> <p>9 bids, and what their bids were. Ideally, you</p> <p>10 would want other features of the bids to hold</p> <p>11 constant the -- what they were proposing to do in</p> <p>12 the work.</p> <p>13 It might -- you know, exactly what you</p> <p>14 would want to control for would vary depending on</p> <p>15 what type of contract was being bid on and the rules</p> <p>16 of the contracting bid process. But you'd have to</p> <p>17 sort of think through all that and learn all of that</p> <p>18 to design a study that could control those things in</p> <p>19 the right way.</p> <p>20 Q Are you aware of any dataset that</p> <p>21 includes that type of information?</p> <p>22 A There definitely are datasets that</p>
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<p>1 disparity is the result of discrimination as</p> <p>2 opposed to some other factor, is appropriate.</p> <p>3 But with that caveat, as I've described in</p> <p>4 my report, one type of variable that is not</p> <p>5 controlled for in Mr. Chow's analysis is whether</p> <p>6 businesses bid on contracts, the frequency with</p> <p>7 which they bid on -- bid for contracts, or what</p> <p>8 their bids were.</p> <p>9 Q Now, we've discussed bidding behavior</p> <p>10 pretty extensively, but, again, as you've</p> <p>11 testified, I guess, have you seen any evidence</p> <p>12 that there is a difference in bidding behavior and</p> <p>13 the frequency of bidding or the number of bids</p> <p>14 submitted between minority-owned businesses and</p> <p>15 nonminority-owned businesses?</p> <p>16 A I'm not aware of evidence on that. I</p> <p>17 don't know. There might be evidence on that, but</p> <p>18 my opinion is that without controlling for bidding</p> <p>19 behavior and without some knowledge that there</p> <p>20 isn't differences in bidding behavior, it's</p> <p>21 inappropriate to draw the conclusion that the</p> <p>22 differences in rates of winning awards is the</p>	<p>1 include bidding behavior by firms in contracting.</p> <p>2 There are studies that have used a dataset like</p> <p>3 this.</p> <p>4 Q Okay. Have you yourself performed any</p> <p>5 analysis of firms' bidding behavior?</p> <p>6 A I have not myself, no. But I'm aware of</p> <p>7 studies that have.</p> <p>8 Q Okay. Did you attempt to review</p> <p>9 Mr. Chow's analysis with bidding behavior</p> <p>10 included?</p> <p>11 A No.</p> <p>12 Q Why not?</p> <p>13 A I wasn't asked to perform my own</p> <p>14 analysis. I was asked to comment on the methods</p> <p>15 and the conclusions reached by the experts,</p> <p>16 including Mr. Chow, I also believe that the data</p> <p>17 that Mr. Chow shared is fundamentally flawed for</p> <p>18 answering the question, and so I don't believe it</p> <p>19 would have made sense to try to make changes to</p> <p>20 the analysis using that flawed data to answer a</p> <p>21 question about the likelihood of winning</p> <p>22 contracts.</p>